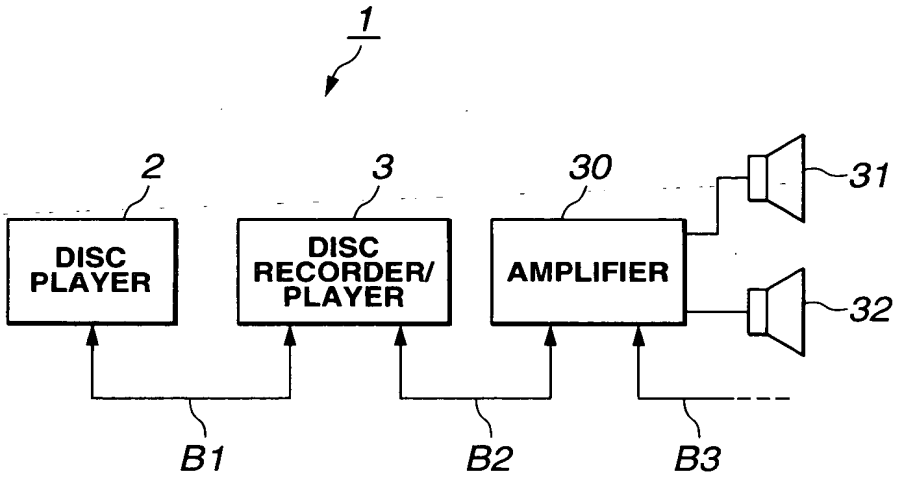
1
2
3
30
31
32
DISC PLAYER
DISC RECORDER/ PLAYER
AMPLIFIER
B1
B2
B3

FIG.1

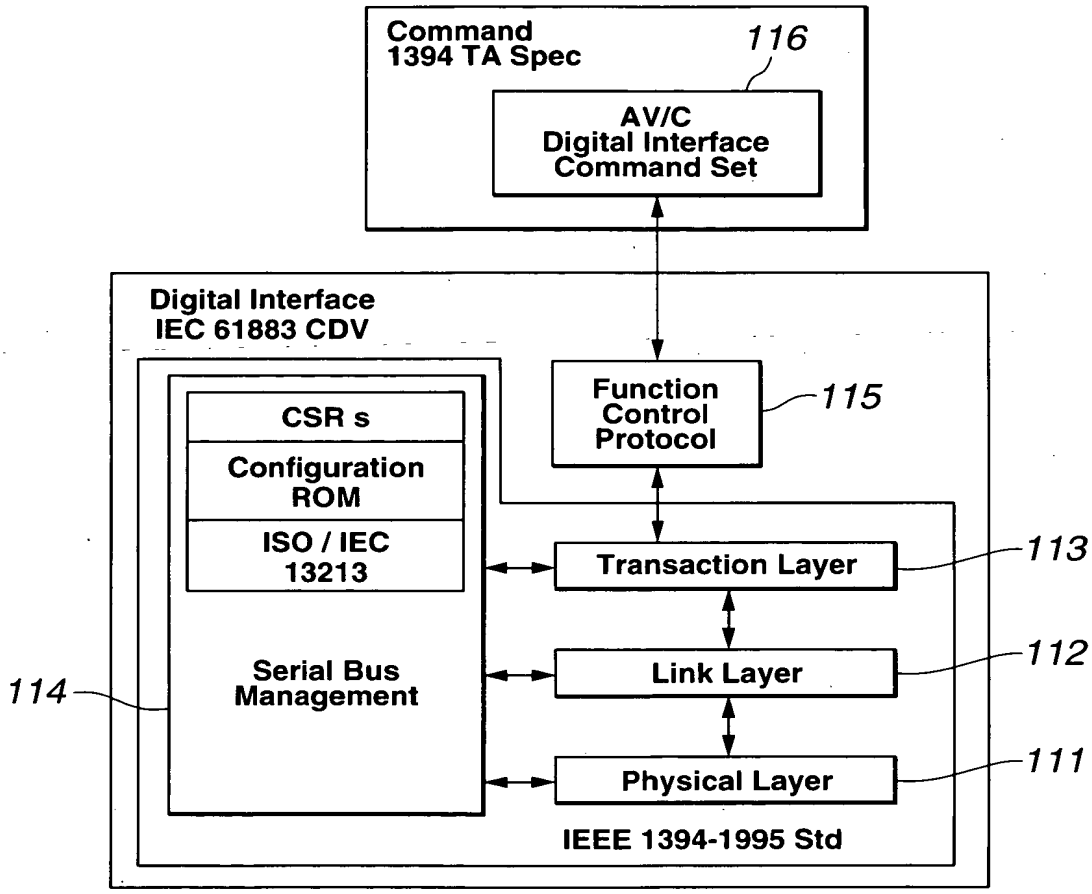
Command
1394 TA Spec
116
AV/C
Digital Interface
Command Set
Digital Interface
IEC 61883 CDV
Function
Control
Protocol
115
CSR s
Configuration
ROM
ISO / IEC
13213
Transaction Layer
113
Link Layer
112
Serial Bus
Management
114
Physical Layer
111
IEEE 1394-1995 Std

FIG.2

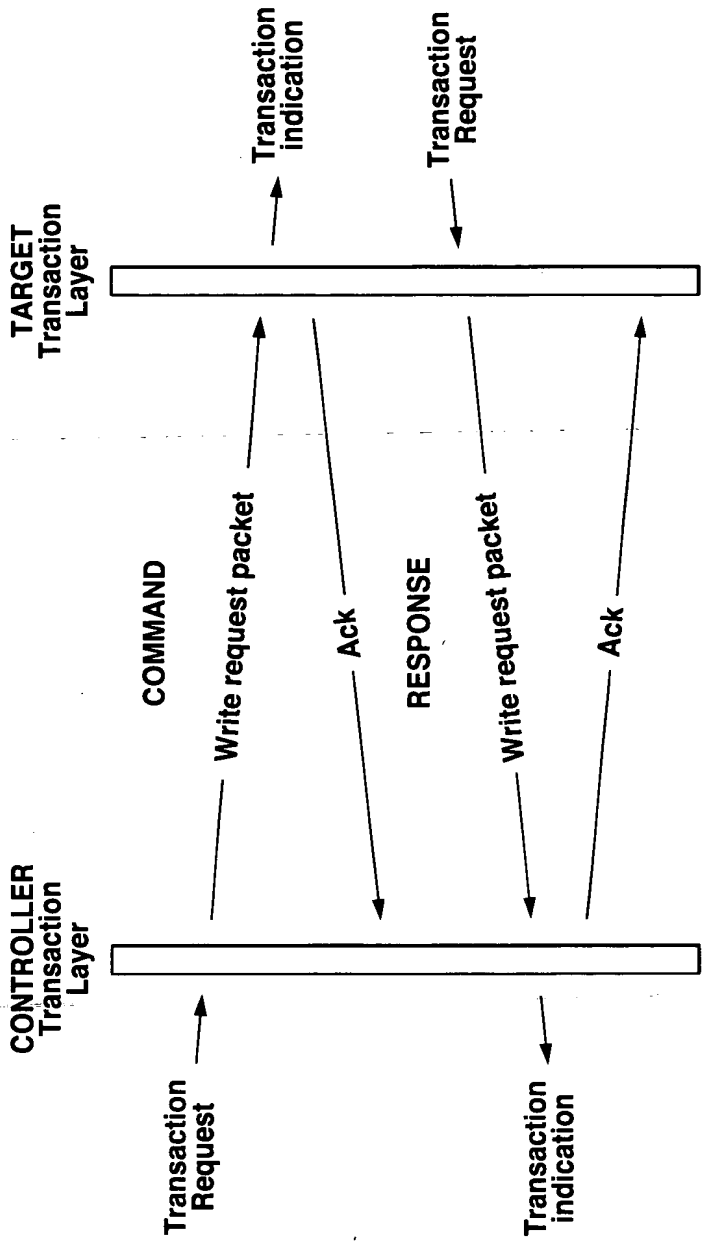
TARGET
Transaction
Layer
Transaction
indication
Transaction
Request
COMMAND
Write request packet
Ack
RESPONSE
Write request packet
Ack
CONTROLLER
Transaction
Layer
Transaction
Request
Transaction
indication

FIG.3

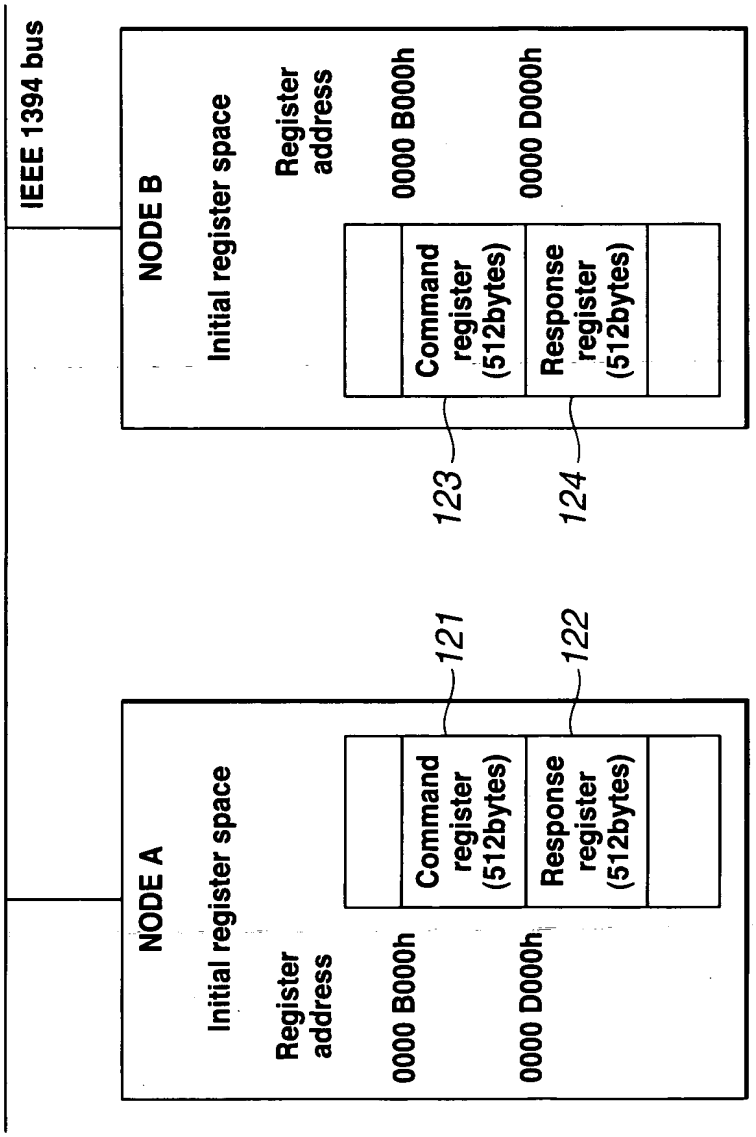
IEEE 1394 bus
NODE A
Initial register space
Register address
0000 B000h
0000 D000h
Command register (512bytes)
Response register (512bytes)
121
122
NODE B
Initial register space
Register address
0000 B000h
0000 D000h
Command register (512bytes)
Response register (512bytes)
123
124

FIG.4

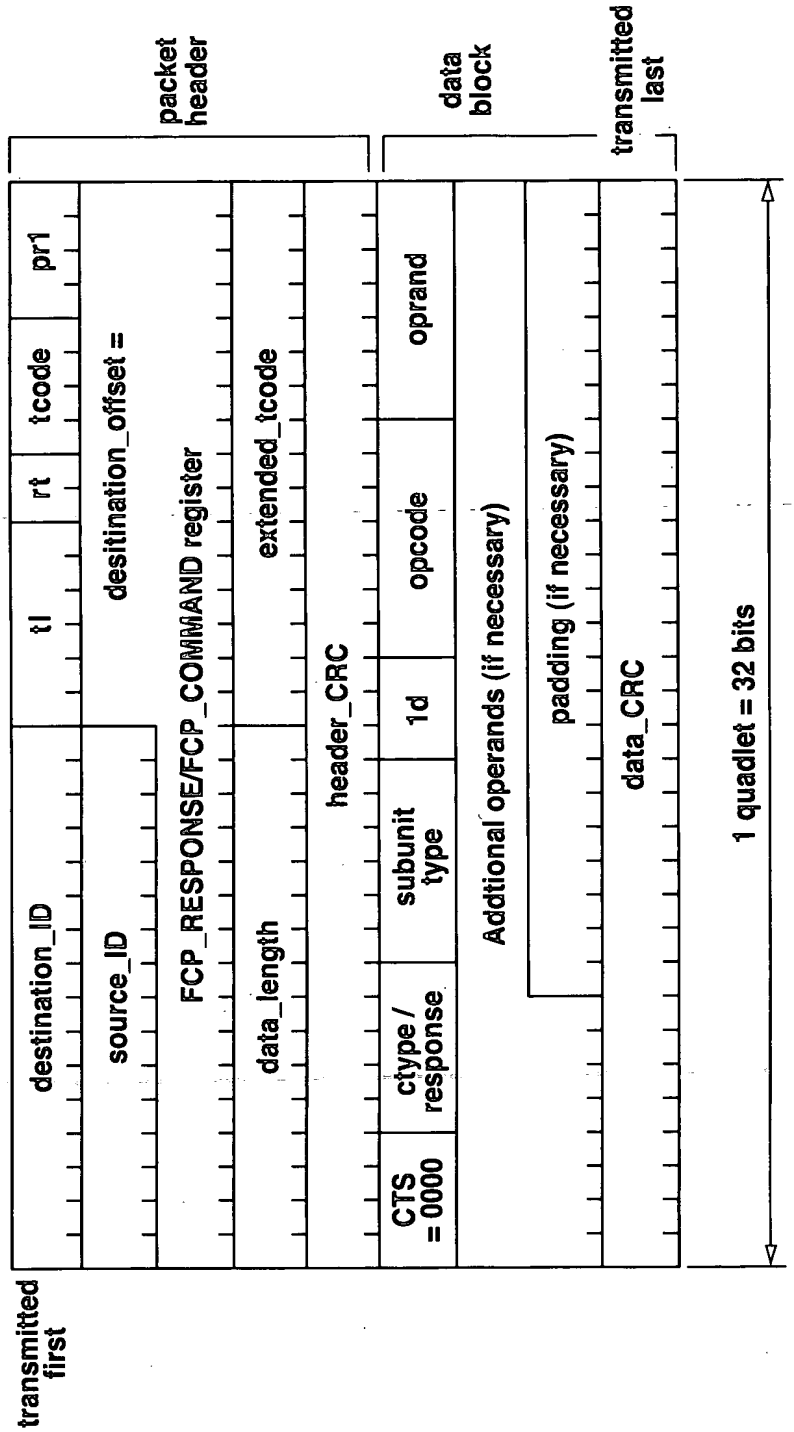
transmitted first
destination_ID
tl
rt
tcode
pr1
source_ID
desitination_offset =
FCP_RESPONSE/FCP_COMMAND register
data_length
extended_tcode
header_CRC
CTS = 0000
ctype / response
subunit type
1d
opcode
oprand
Additional operands (if necessary)
padding (if necessary)
data_CRC
1 quadlet = 32 bits
packet header
data block
transmitted last

FIG.5

Command	0000	CONTROL
	0001	STATUS
	0010	SPECIFIC INQUIRY
	0011	NOTIFY
	0100	GENERAL INQUIRY
	0101 ~ 0111	(reserved for future specification)
Response	1000	NOT IMPLEMENTED
	1001	ACCEPTED
	1010	REJECTED
	1011	IN TRANSITION
	1100	IMPLEMENTED/STABLE
	1101	CHANGED
	1110	(reserved for future specification)
	1111	INTERIM

FIG.6

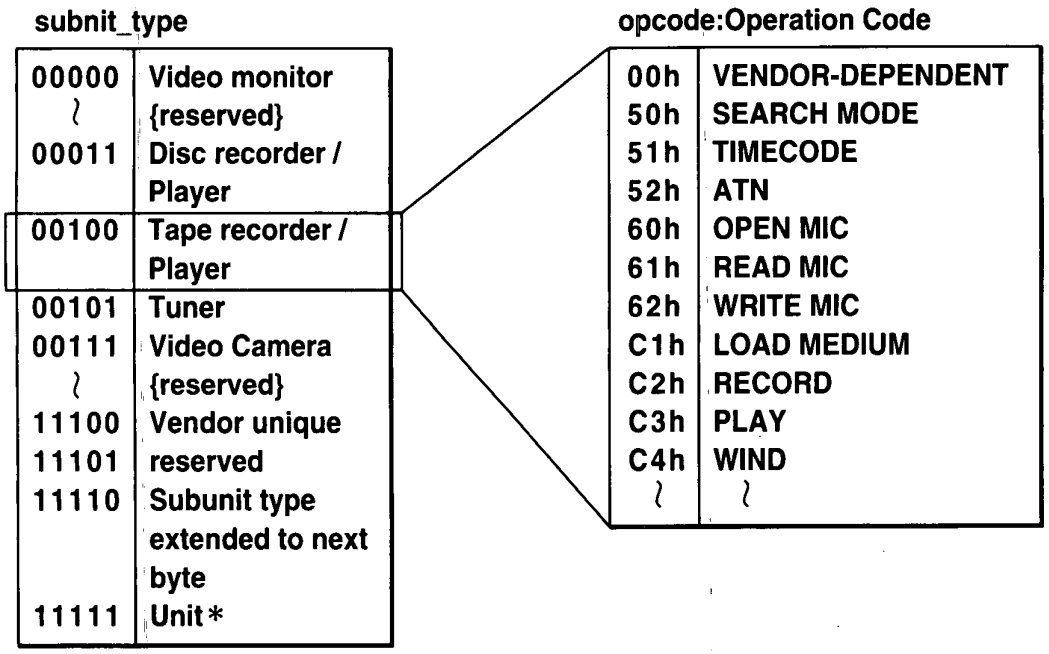

FIG.7

09/744279

AV/C	control	taper recorder /player	ID = 0	PLAY	FORWARD
CTS = 0000	ctype = 0000	subunit type = 00100	id = 000	opcode = C3h	operand = 75h

FIG.8

AV/C	accepted	taper recorder /player	ID = 0	PLAY	FORWARD
CTS = 0000	response = 1001	subunit type = 00100	id = 000	opcode = C3h	operand = 75h

FIG.9

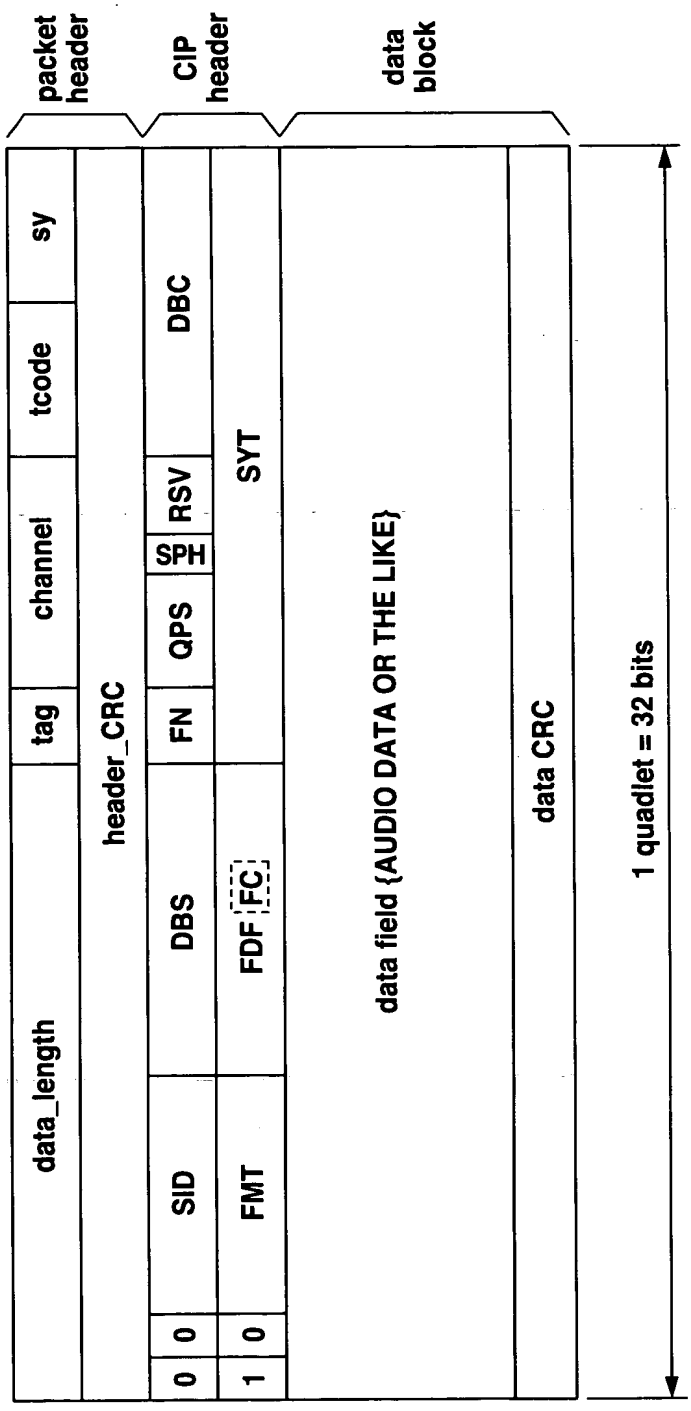
packet header
CIP header
data block
data_length
tag
channel
tcode
sy
header_CRC
SID
DBS
FN
QPS
SPH
RSV
DBC
0 0
FMT
FDF FC
SYT
1 0
data field {AUDIO DATA OR THE LIKE}
data CRC
1 quadlet = 32 bits

FIG.10

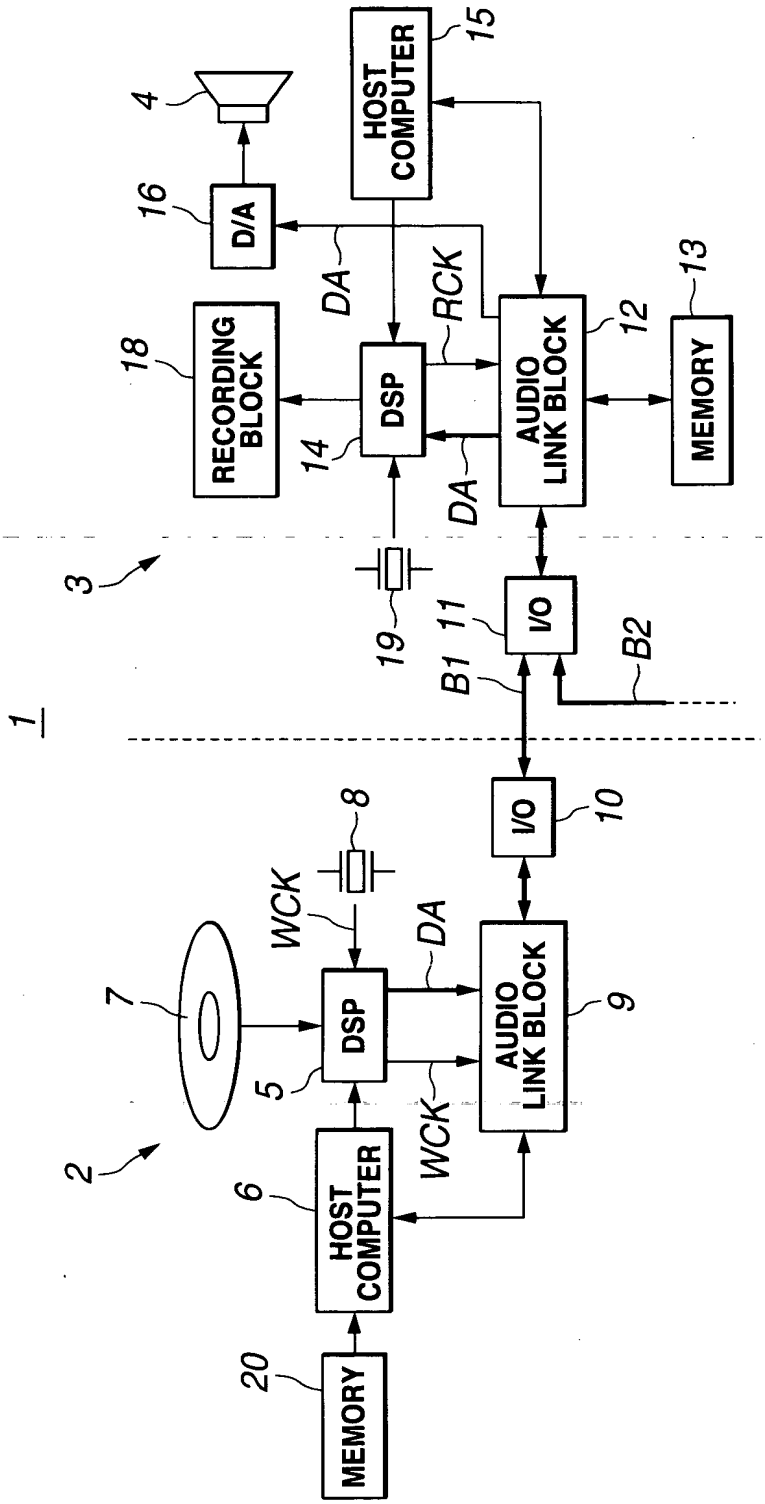
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
18
19
20
HOST COMPUTER
D/A
RECORDING BLOCK
DSP
AUDIO LINK BLOCK
MEMORY
I/O
WCK
DA
RCK
B1
B2

FIG.11

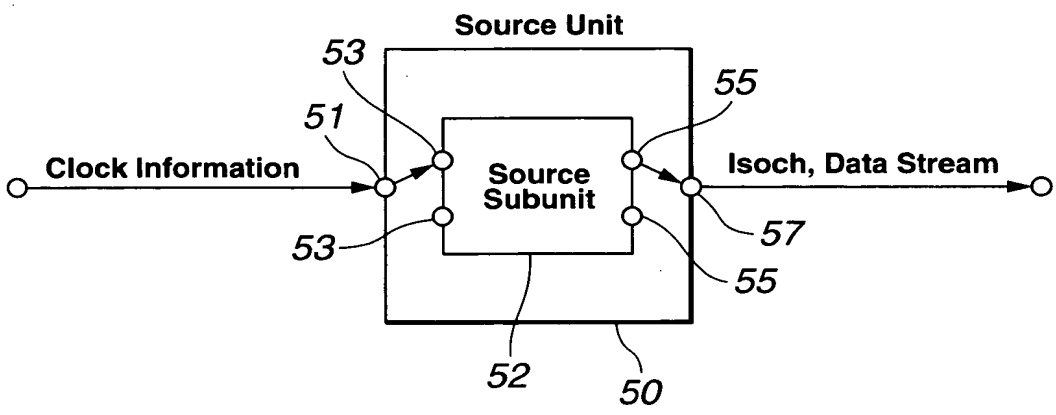
Source Unit
53
51
55
Clock Information
Source Subunit
Isoch, Data Stream
53
57
55
52
50

FIG.12

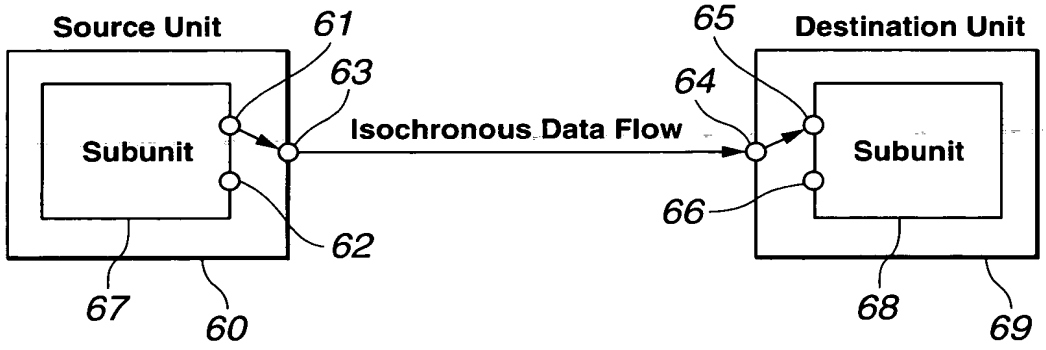
Source Unit
61
63
65
Destination Unit
64
Subunit
Isochronous Data Flow
Subunit
66
62
67
60
68
69

FIG.13

	msb							lsb
opcode	RATE ($B3_{16}$)							
operand [0]	subfunction							
operand [1]	result							
operand [2]	plug_type							
operand [3]	plug_id							
operand [4] ▫ ▫	subfunction_depended							

FIG.14

subfunction	value	meaning
SYNC SELECT	00_{16}	Select a clock source to synchronize with a stream on a subunit source plug.
BASE CONFIGURE	01_{16}	Configure a base rate on subunit source plug.
FLOW CONTROL	02_{16}	Control a flow rate on a subunit source plug.
CAPABILITY INQUIRY	80_{16}	Inquire about subunit plug capabilities associated with the RATE command.
—	all others	Reserved for future specification.

FIG.15

	msb							lsb
opcode	RATE ($B3_{16}$)							
operand [0]	SYNC SELECT (00_{16})							
operand [1]	result							
operand [2]	plug_type (00_{16})							
operand [3]	plug_id							
operand [4]	sync_select_state							
operand [5]	destination_plug							

FIG.16

response frame type	result	result code name	meaning
ACCEPTED	00_{16}	SUCCESS	Successful completion.
	all others	–	Reserved for future specification.
REJECTED	80_{16}	invalid	The requested selection is invalid in the current base rate and / or flow rate
	81_{16}	unavailable	The requested selection is valid, but the controller has no permission to select the clock source on the subunit source plug because another controller is flow-controlling it.
	FF_{16}	unknown	An unknown error occurred.
	all others	–	Reserved for future specification.
NOT IMPLEMENTED INTERIM	FF_{16}	–	No result.

FIG.17

sync_select_state	value	meaning
INTERNAL	00_{16}	The stream on the subunit source plug is synchronized with the internal clock.
EXTERNAL	00_{16}	The stream on the subunit source plug is synchronized with an external clock.
FLOW CONTROL	$0F_{16}$	The data rate on the subunit source plug is dynamically controlled with the FLOW CONTROL subfunction. The internal clock is expected to be controlled by on external device.
—	all others	Reserved for future specification.

FIG.18

response frame type	result	result code name	meaning
STABLE	00_{16}	in_sync	The stream on the subunit source plug is in sync with the clock source.
	01_{16}	out_of_sync	The stream on the subunit source plug is out of sync with the clock source.
	08_{16}	stopped	The stream on the subunit source plug was stopped normally.
	09_{16}	suspended	The stream on the subunit source plug was suspended because of some error.
	all others	—	Reserved for future spacification.
NOT IMPLEMENTED REJECTED IN TRANSITION	FF_{16}	—	No result.

FIG.19

	msb							lsb
opcode	RATE ($B3_{16}$)							
operand [0]	BASE CONFIGURE (01_{16})							
operand [1]	result							
operand [2]	plug_type (00_{16})							
operand [3]	plug_id							
operand [4]	base_config_state							

FIG.20

response frame type	result	result code name	meaning
ACCEPTED	00_{16}	SUCCESS	Successful completion.
	all others	—	Reserved for future specification.
REJECTED	80_{16}	invalid	The requested configuration is invalid in the current sync selection and/or flow rate.
	81_{16}	unavailable	The requested configuration is valid, but the controller has no permission to configure the base rate on the subunit source plug in the FLOW CONTROL state.
	82_{16}	not_configured	The requested configuration is valid and the subunit source plug is available, but the base rate on the subunit source plug cannot be configured to any speed other than the current base rate, because the subunit is outputting a stream on the source plug.
	FF_{16}	unknown	An unknown error occurred.
	all others	—	Reserved for future specification.
NOT IMPLEMENTED INTERIM	FF_{16}	—	No result.

FIG.21

base_config_state	value	value
X1 SPEED	00_{16}	The base rate is set to x1 speed.
X2 SPEED	01_{16}	The base rate is set to x2 speed.
X3 SPEED	02_{16}	The base rate is set to x3 speed.
X4 SPEED	03_{16}	The base rate is set to x4 speed.
X5 SPEED	04_{16}	The base rate is set to x5 speed.
X6 SPEED	05_{16}	The base rate is set to x6 speed.
X7 SPEED	06_{16}	The base rate is set to x7 speed.
X8 SPEED	07_{16}	The base rate is set to x8 speed.
X9 SPEED	08_{16}	The base rate is set to x9 speed.
X10 SPEED	09_{16}	The base rate is set to x10 speed.
X11 SPEED	$0A_{16}$	The base rate is set to x11 speed.
X12 SPEED	$0B_{16}$	The base rate is set to x12 speed.
X13 SPEED	$0C_{16}$	The base rate is set to x13 speed.
X14 SPEED	$0D_{16}$	The base rate is set to x14 speed.
X15 SPEED	$0E_{16}$	The base rate is set to x15 speed.
X16 SPEED	$0F_{16}$	The base rate is set to x16 speed.
—	10_{16}-FF_{16}	Reserved for future specification.

FIG.22

response frame type	result	result code name	meaning
STABLE	00_{16}	configurable	The base rate on the source plug may be configured because the subunit is NOT outputting a stream on the source plug. (This result does not guarantee the success of the configuration.)
	01_{16}	not_configurable	The base rate on the source plug cannot be configured because the subunit is outputting a stream on the source plug.
	all others	—	Reserved for future spacification.
NOT IMPLEMENTED REJECTED IN TRANSITION	FF_{16}	—	No result.

FIG.23

	msb							lsb
opcode	RATE ($B3_{16}$)							
operand [0]	FLOW CONTROL (02_{16})							
operand [1]	result							
operand [2]	plug_type (00_{16})							
operand [3]	plug_id							
operand [4]	flow_control_state							

FIG.24

response frame type	result	result code name	meaning
ACCEPTED	00_{16}	SUCCESS	Successful completion.
	all others	—	Reserved for future specification.
REJECTED	80_{16}	invalid	The requested controller is invalid in the current sync selection and/or base rate.
	81_{16}	unavailable	The requested control is valid, but the controller has no permission to control the flow rate on the subunit source plug in the FLOW CONTROL state.
	82_{16}	not_controlled	The requested control is valid and the subunit source plug is available, but the flow rate on the source plug cannot be controlled with any operation other than STANDARD, because the subunit is NOT outputting a stream on the source plug.
	FF_{16}	unknown	An unknown error occurred.
	all others	—	Reserved for future specification.
NOT IMPLEMENTED INTERIM	FF_{16}	—	No result.

FIG.25

flow_control_state	value	meaning
STANDARD	00_{16}	The source plug outputs a stream at the base rate.
FAST	01_{16}	The source plug outputs a stream at the base rate +1%
SLOW	81_{16}	The source plug outputs a stream at the base rate -1%
—	all others	Reserved for future specification.

FIG.26

response frame type	result	result code name	meaning
STABLE	00_{16}	controllable	The flow rate on the source plug may be controlled because the subunit is outputting a stream on the source plug. (This result does not guarantee the success of the control.)
	01_{16}	not_controllable	The flow rate on the source plug cannot be controlled because the subunit is NOT outputting a stream on the source plug.
	all others	—	Reserved for future specification.
NOT IMPLEMENTED REJECTED IN TRANSITION	FF_{16}	—	No result.

FIG.27

	msb							lsb
opcode	RATE ($B3_{16}$)							
operand [0]	CAPABILITY INQUIRY (80_{16})							
operand [1]	result							
operand [2]	plug_type (00_{16})							
operand [3]	plug_id							
operand [4]	number_of_combinations (n)							
operand [5]	combination_of_states [0]							
operand [6]								
operand [7]								
⋮	⋮							
⋮	combination_of_states [n-1]							
⋮								
⋮								

FIG.28

address offset	combination_of_states []
00_{16}	sync_select_state
01_{16}	base_config_state
02_{16}	flow_control_state

FIG.29

response frame type	result	meaning
ACCEPTED	$xxxx\ xxx1_2$	combination_of_states [0] is supported.
	$xxxx\ xx1x_2$	combination_of_states [1] is supported.
	$xxxx\ x1xx_2$	combination_of_states [2] is supported.
	$xxxx\ 1xxx_2$	combination_of_states [3] is supported.
	$xxx1\ xxxx_2$	combination_of_states [4] is supported.
	$xx1x\ xxxx_2$	combination_of_states [5] is supported.
	$x1xx\ xxxx_2$	combination_of_states [6] is supported.
	$1xxx\ xxxx_2$	combination_of_states [7] is supported.
REJECTED NOT IMPLEMENTED INTERIM	FF_{16}	No result.

FIG.30

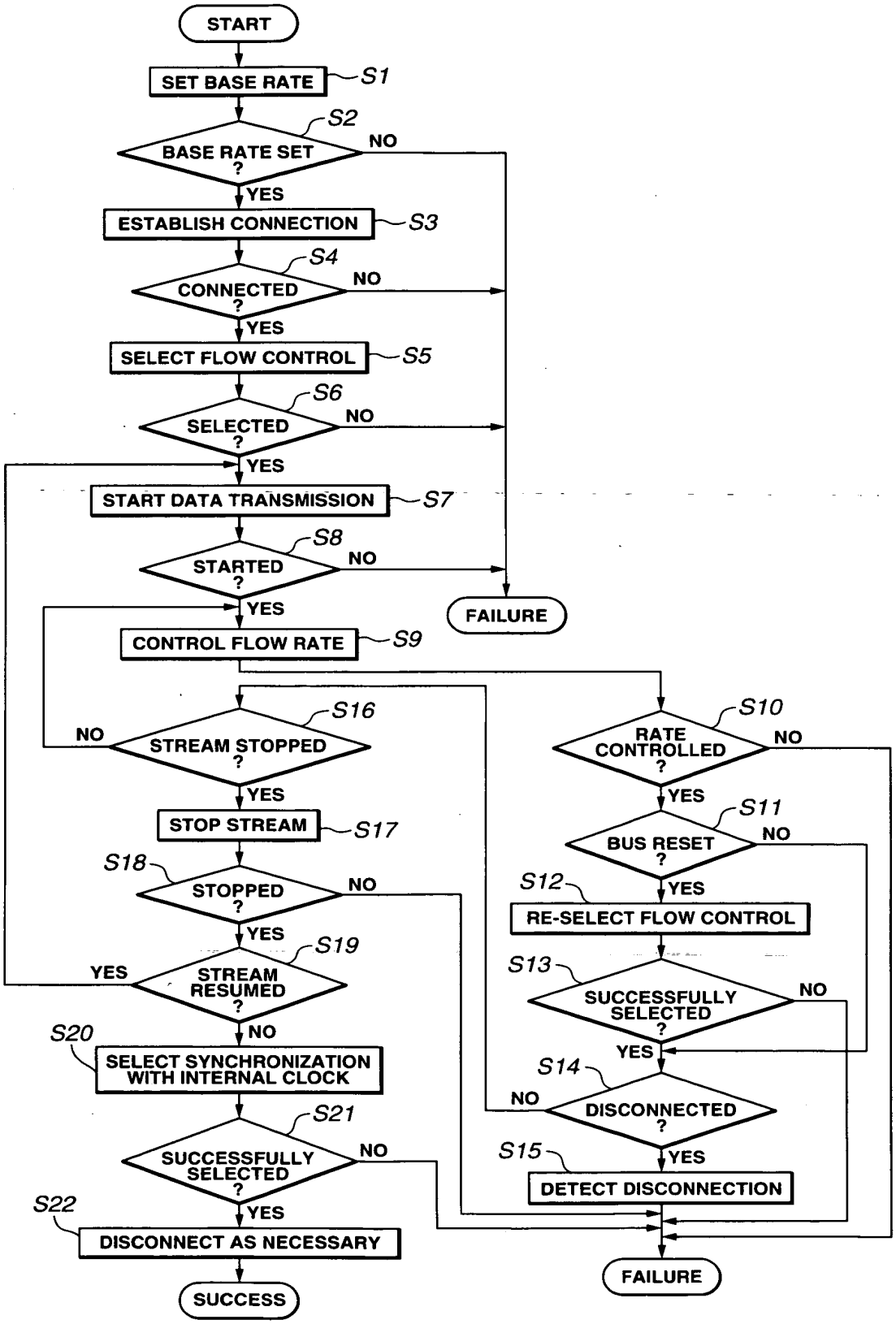
START
SET BASE RATE
S1
S2
BASE RATE SET ?
NO
YES
ESTABLISH CONNECTION
S3
S4
CONNECTED ?
NO
YES
SELECT FLOW CONTROL
S5
S6
SELECTED ?
NO
YES
START DATA TRANSMISSION
S7
S8
STARTED ?
NO
YES
FAILURE
CONTROL FLOW RATE
S9
S16
NO
STREAM STOPPED ?
YES
STOP STREAM
S17
S18
STOPPED ?
NO
YES
S19
YES
STREAM RESUMED ?
NO
S20
SELECT SYNCHRONIZATION WITH INTERNAL CLOCK
S21
SUCCESSFULLY SELECTED ?
NO
YES
S22
DISCONNECT AS NECESSARY
SUCCESS
S10
RATE CONTROLLED ?
NO
YES
S11
BUS RESET ?
NO
YES
S12
RE-SELECT FLOW CONTROL
S13
SUCCESSFULLY SELECTED ?
NO
YES
S14
NO
DISCONNECTED ?
YES
S15
DETECT DISCONNECTION
FAILURE

FIG.31